

REMARKS

In response to the Notice to Comply with Requirements for Patent Applications Containing Nucleotide Sequence and/or Amino Acid Sequence Disclosures mailed October 2, 2002, Applicants submit concurrently herewith a replacement Sequence Listing in the above-referenced application. In the replacement Sequence Listing, the nucleotide and amino acid sequences for Accession Nos. AF124264, AF124265, and AF078752 have been added to the Sequence Listing. Accession Nos. AF124264 and AF124265 are cited in the specification on page 7 and in claims 5, 18, 21 30, 32, and 36. Accession No. AF078752 is cited on page 10 of the specification.

The specification has been amended on pages 7 and 10 to insert the respective SEQ ID NO after each citation of an Accession Number. No new matter has been added by way of amendment to the specification.


Claims 5, 18, 21, 30, 32, and 36 have been amended to replace the Accession Numbers recited therein with the corresponding SEQ ID NOs in the replacement Sequence Listing. In part (e) of these claims, "having GenBank Accession No. AF124264" has been replaced with --set forth in SEQ ID NO: 3--. In part (f) of these claims, "having GenBank Accession No. AF124265" has been replaced with --set forth in SEQ ID NO: 5--. No new matter has been added by way of amendment to the claims.

Claims 1-36 are pending.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required

therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,



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Marilyn Muñoz

Version With Markings to Show Changes Made:

In The Specification:

Please amend the paragraph that begins at line 5 on page 7 of the specification as follows:

Preferably acyl-CoA thioesterase expression is modulated in a plant by transforming the plant or plant cell with at least a portion of an acyl-CoA thioesterase nucleotide sequence. By "acyl-CoA thioesterase nucleotide sequence" is intended any nucleotide sequence of an acyl-CoA thioesterase gene or transcript, including, but not limited, to coding sequences, exons, introns, 5'-regulatory regions, 3'-regulatory regions, 5'-untranslated regions, 3'-untranslated regions and the like. Any acyl-CoA thioesterase nucleotide sequences known in the art may be employed in the methods of the present invention. Preferred acyl-CoA thioesterases nucleotide sequences are those which encode peroxisomal acyl-CoA thioesterases. More preferred acyl-CoA thioesterase nucleotide sequences include the nucleotide sequence set forth in SEQ ID NO: 1, a nucleotide sequence comprising at least 45% identity to the nucleotide set forth in SEQ ID NO: 1, a nucleotide sequence encoding the amino acid sequence set forth in SEQ ID NO: 2 and the nucleotide sequences set forth in GenBank Accession Nos. AF124264 (SEQ ID NO: 3) and AF124265 (SEQ ID NO: 5). Most preferred acyl-CoA thioesterases nucleotide sequences include the nucleotide sequence set forth in SEQ ID NO: 1, a nucleotide sequence comprising at least 45% identity to the nucleotide set forth in SEQ ID NO: 1 and a nucleotide sequence encoding the amino acid sequence set forth in SEQ ID NO: 2.

Please amend the paragraph that begins at line 20 on page 10 of the specification as follows:

The invention also encompasses increasing the level of one or more of the acyltransferases that are involved in the biosynthesis of triacylglycerol such as, for example, the diacylglycerol acyltransferase from mouse (Accession No. AF078752[]], SEQ ID NO: 8). While the invention encompasses the use of any acyltransferase, preferred acyltransferases are those that have a wide substrate range. Of particular interest are acyltransferases that can efficiently catalyze the esterification of at least one unusual fatty acid to the glycerol moiety.

In The Claims:

Please amend claims 5, 18, 21, 30, 32, and 36 as follows:

5. (Amended) A method for decreasing β -oxidation in a plant comprising transforming at least one cell of said plant with a nucleotide construct comprising an acyl-CoA thioesterase nucleotide sequence or fragment thereof, said nucleotide sequence selected from the group consisting of:

- (a) the nucleotide sequence set forth in SEQ ID NO: 1;
- (b) a nucleotide sequence which encodes a polypeptide comprising the amino acid sequence set forth in SEQ ID NO: 2;
- (c) a nucleotide sequence comprising at least 75% identity to the nucleotide sequence set forth in SEQ ID NO: 1;
- (d) a nucleotide sequence encoding a polypeptide having acyl-CoA thioesterase activity, wherein said nucleotide sequence comprises at least 24 contiguous bases of the nucleotide sequence set forth in SEQ ID NO: 1;

- (e) the nucleotide sequence [having GenBank Accession No. AF124264;] set forth in SEQ ID NO: 3;
- (f) the nucleotide sequence [having GenBank Accession No. AF124265;] set forth in SEQ ID NO: 5; and
- (g) a nucleotide sequence complementary to a nucleotide sequence of (a), (b), (c), (e), or (f);

wherein the level of oil or the level of at least one constituent of said oil is increased in at least one part of said plant.

18. (Amended) A method for optimizing a plant for seed oil production comprising:
transforming at least one cell of said plant with a first nucleotide construct comprising a first nucleotide sequence or fragment thereof, so as to increase or decrease acyl-CoA thioesterase expression in a seed, said first nucleotide sequence selected from the group consisting of:

- (a) the nucleotide sequence set forth in SEQ ID NO: 1,
- (b) a nucleotide sequence which encodes a polypeptide comprising the amino acid sequence set forth in SEQ ID NO: 2,
- (c) a nucleotide sequence comprising at least 75% identity to the nucleotide sequence set forth in SEQ ID NO: 1,
- (d) a nucleotide sequence encoding a polypeptide having acyl-CoA thioesterase activity, wherein said nucleotide sequence comprises at least 24 contiguous bases of the nucleotide sequence set forth in SEQ ID NO: 1,
- (e) the nucleotide sequence [having GenBank Accession No. AF124264;] set forth in SEQ ID NO: 3,
- (f) the nucleotide sequence [having GenBank Accession No. AF124265;] set forth in SEQ ID NO: 5, and
- (g) a nucleotide sequence complementary to a nucleotide sequence of (a), (b), (c), (e), or (f); and

transforming said cell with a second nucleotide construct comprising a second nucleotide sequence or fragment thereof, so as to decrease the level or activity of acyl-CoA oxidase or multifunctional protein type II in a seed, said second nucleotide sequence selected from the group consisting of an acyl-CoA oxidase nucleotide sequence or a multifunctional protein type II nucleotide sequence;

wherein the level of oil or the level of at least one constituent of said oil is increased in at least one part of said seed.

21. (Amended) A transformed plant comprising in its genome a stably incorporated nucleotide construct comprising a promoter that drives expression a plant operably linked to a nucleotide sequence encoding an acyl-CoA thioesterase, said nucleotide sequence selected from the group consisting of:

- (a) the nucleotide sequence set forth in SEQ ID NO: 1;
- (b) a nucleotide sequence which encodes a polypeptide comprising the amino acid sequence set forth in SEQ ID NO: 2;
- (c) a nucleotide sequence comprising at least 75% identity to the nucleotide sequence set forth in SEQ ID NO: 1;
- (d) a nucleotide sequence encoding a polypeptide having acyl-CoA thioesterase activity, wherein said nucleotide sequence comprises at least 24 contiguous bases of the nucleotide sequence set forth in SEQ ID NO: 1;
- (e) the nucleotide sequence [having GenBank Accession No. AF124264;] set forth in SEQ ID NO: 3;
- (f) the nucleotide sequence [having GenBank Accession No. AF124265;] set forth in SEQ ID NO: 5; and
- (g) a nucleotide sequence complementary to a nucleotide sequence of (a), (b), (c), (e), or (f);

wherein the level of said acyl-CoA thioesterase is decreased or increased in said plant or part thereof.

30. (Amended) A transformed plant cell comprising in its genome a stably incorporated nucleotide construct comprising a promoter that drives expression a plant operably linked to a nucleotide sequence encoding an acyl-CoA thioesterase, said nucleotide sequence selected from the group consisting of:

- (a) the nucleotide sequence set forth in SEQ ID NO: 1;
- (b) a nucleotide sequence which encodes a polypeptide comprising the amino acid sequence set forth in SEQ ID NO: 2;
- (c) a nucleotide sequence comprising at least 75% identity to the nucleotide sequence set forth in SEQ ID NO: 1;
- (d) a nucleotide sequence encoding a polypeptide having acyl-CoA thioesterase activity, wherein said nucleotide sequence comprises at least 24 contiguous bases of the nucleotide sequence set forth in SEQ ID NO: 1;
- (e) the nucleotide sequence [having GenBank Accession No. AF124264;] set forth in SEQ ID NO: 3;
- (f) the nucleotide sequence [having GenBank Accession No. AF124265;] set forth in SEQ ID NO: 5; and
- (g) a nucleotide sequence complementary to a nucleotide sequence of (a), (b), (c), (e), or (f);

wherein the level of said acyl-CoA thioesterase is decreased or increased in said plant cell.

32. (Amended) The plant of claim 31, wherein said first nucleotide sequence is selected from the group consisting of:

- (a) the nucleotide sequence set forth in SEQ ID NO: 1;
- (b) a nucleotide sequence which encodes a polypeptide comprising the amino acid sequence set forth in SEQ ID NO: 2;
- (c) a nucleotide sequence comprising at least 75% identity to the nucleotide sequence set forth in SEQ ID NO: 1;

- (d) a nucleotide sequence encoding a polypeptide having acyl-CoA thioesterase activity, wherein said nucleotide sequence comprises at least 24 contiguous bases of the nucleotide sequence set forth in SEQ ID NO: 1;
- (e) the nucleotide sequence [having GenBank Accession No. AF124264;] set forth in SEQ ID NO: 3;
- (f) the nucleotide sequence [having GenBank Accession No. AF124265;] set forth in SEQ ID NO: 5; and
- (g) a nucleotide sequence complementary to a nucleotide sequence of (a), (b), (c), (e), or (f).

36. (Amended) The plant cell of claim 35, wherein said first nucleotide sequence is selected from the group consisting of:

- (a) the nucleotide sequence set forth in SEQ ID NO: 1;
- (b) a nucleotide sequence which encodes a polypeptide comprising the amino acid sequence set forth in SEQ ID NO: 2;
- (c) a nucleotide sequence comprising at least 75% identity to the nucleotide sequence set forth in SEQ ID NO: 1;
- (d) a nucleotide sequence encoding a polypeptide having acyl-CoA thioesterase activity, wherein said nucleotide sequence comprises at least 24 contiguous bases of the nucleotide sequence set forth in SEQ ID NO: 1;
- (e) the nucleotide sequence [having GenBank Accession No. AF124264;] set forth in SEQ ID NO: 3;
- (f) the nucleotide sequence [having GenBank Accession No. AF124265;] set forth in SEQ ID NO: 5; and
- (g) a nucleotide sequence complementary to a nucleotide sequence of (a), (b), (c), (e), or (f).